Helen Zhou

Ph.D. Student in CMU Machine Learning Department

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Education

Carnegie Mellon University (CMU)
Candidate for Ph.D. in Machine Learning (GPA: 4.1/4.0)

Pittsburgh, PA
2018 - Present

Massachusetts Institute of Technology (MIT)
M.Eng. in Computer Science & Electrical Engineering (GPA: 5.0/5.0)
B.S. in Computer Science & Electrical Engineering (GPA: 4.9/5.0)

Cambridge, MA
2017 - 2018
2013 - 2017

Research Experience

Present
Sept 2018

Ph.D. Student, Machine Learning Department, CMU
Advisor: Prof. Zachary Lipton
- Tackle problems at the intersections of machine learning and healthcare
- Develop machine learning models for time series, causality, and knowledge graphs

Jan 2020
May 2019

Ph.D. Research Intern, Medical Brain, Google Health
Advisors: Dr. Andrew Dai, Dr. Yuan Xue
- Explore neural ordinary differential equation models for patient trajectory modeling

Aug 2018
Sept 2017

M.Eng. Research Student, Clinical Machine Learning Group, MIT
Advisor: Prof. David Sontag
- Thesis: *Large-scale Prediction of Patient-Level Antibiotic Resistance: Towards Clinical Decision Support for Improved Antimicrobial Stewardship* (MIT Masterworks video)

Sept 2017
June 2017

Research Intern, Digital Relevance Ranking Team, Amazon Search (A9)
Advisor: Dr. Vamsi Salaka
- Created a universal ranking model and review summarization feature using topic-modeling

Aug 2017
Oct 2015

Independent Research Collaboration, Fluid Interfaces Group, MIT
Advisor: Prof. Pattie Maes
- Performed appearance-based gaze estimation using deep learning for low-cost VR settings

May 2017
Jan 2014

Undergraduate Research Student, Laboratory for Social Machines, MIT
Advisor: Prof. Deb Roy
- Developed and implemented machine learning models for characterizing food purchase behavior, linking profiles across platforms, and contextual text sentiment classification

Publications & Talks

1. **H Zhou***, C Cheng*, ZC Lipton, GH Chen, JC Weiss. Predicting Mortality Risk in Viral and Unspecified Pneumonia to Assist Clinicians with COVID-19 ECMO Planning. In proceedings of *18th International Conference on Artificial Intelligence in Medicine, AIME 2020.*

2. **H Zhou**, Y Xue, A Dai. "Neural Interventional GRU-ODEs." *BayLearn 2020: Bay Area ML Symposium.*

3. S Boominathan, M Oberst, **H Zhou**, S Kanjilal, D Sontag. "Treatment Policy Learning in Multiobjective Settings with Fully Observed Outcomes." *Knowledge Discovery and Data Mining Conference,* KDD 2020.

4. S Kanjilal, M Oberst, S Boominathan, **H Zhou**, DC Hooper, D Sontag. "A decision algorithm to promote outpatient antimicrobial stewardship for uncomplicated urinary tract infection." *Science Translation Medicine 2020.*

5. **H Zhou**, S Kanjilal, D Sontag. "Large-Scale Prediction of Patient-Level Antibiotic Resistance: Towards Clinical Decision Support for Improved Antimicrobial Stewardship." 2018 MIT M.Eng. Thesis.

6. S Vosoughi, **H Zhou,** D Roy. "Enhanced Twitter Sentiment Classification Using Contextual Information." In proc. of EMNLP 2015 workshop on Approaches to Subjectivity, Sentiment & Social Media Analysis.

7. S Vosoughi, **H Zhou**, D Roy. "Digital Stylometry: Linking Profiles Across Social Networks." In proc. of 2015 International Conference on Social Informatics. Also in Lecture Notes in Comp. Sci. book series.

8. **H Zhou**, D Roy, S Vosoughi. "Analyzing & Understanding Food Networks." 2016 EECScon conference.
9. **H Zhou**, D Mayo, S Greenwald. "Siamese Convolutional Neural Networks for Appearance-Based Gaze Estimation." Gave talk at the 2017 European Conference on Eye Movements. Wuppertal, Germany.

Selected Honors & Awards

2019 - Present	National Science Foundation Graduate Research Fellowship
2019 - Present	Paul and Daisy Soros Fellow
2016 - 2018	**MIT Eta Kappa Nu** (HKN) & **Tau Beta Pi** (TBP) Honor Society
2017 - 2017	**1st place** in **Amazon Search intern hackathon**, idea now implemented in amazon.com
2015 - 2017	SuperUROP Scholar
2014 - 2015	**Society of Women Engineers Scholarship** Recipient

Other Industry Experience

Sept 2016	Software Engineering Intern, Google Daydream
May 2016	Created and integrated firmware update library and UI for VR headset controller
Feb 2016	Software Engineering Intern, Brain Power LLC.
Jan 2016	Designed and implemented various computer vision, game, and analytical features for the company's main product: Google Glass tailored to help kids with autism
Aug 2015	Software Engineering Intern, Google Fiber
May 2015	Created an extensible Django website for visualization & analysis of Wi-Fi tests

Leadership & Service

Dean's PhD Advisory Committee ('20 - Present)
- Work closely with the dean to improve the well-being of the graduate student community (initiatives for improving mental health, diversity & inclusion, advisor-advisee relationships, interdepartmental interaction).
- Lead the creation of a coffee chat program and school-wide virtual events

MIT Eta Kappa Nu EECS Honor Society - Tutoring Chair ('17-'18), **Internal Relations Chair** ('16-'17)
- Lead & organize an EECS department-wide tutoring program for ~300 students

MIT IEEE Undergrad. Research & Tech. Conference - Co-Chair ('15-'16), Webmaster ('14-'15)
- Created "EECSplore" outreach event, gave plenaries, organized volunteers, managed 200 attendees, made website for the first annual international conference, & coordinated a 15-member steering committee

Teaching

- **Intro to Machine Learning TA** (6.036, Fall & Spring 2017) - helped manage 700 students, taught recitations, crafted assignments, and answered questions in section/ online
- **Intro to EECS II head grader** (6.02, Fall 2016) - wrote solutions to be distributed to graders
- **Algorithms & Math for Computer Science HKN Tutor** (6.006, 6.046, 6.042, Fall 2014 - Spring 2016)
- **Intro Deep Learning TA** (6.S191), **Comp. Structs LA** (6.004), **Multivar. Calc. TA** (18.02), **Intro EECS LA** (6.01)

Skills

Programming Languages:	Python, Java, R, MATLAB, Javascript, C#, Swift, C++
Machine Learning Libraries:	Torch, TensorFlow, Keras, Scikit-learn, SciPy, NumPy
Other Frameworks:	ROS, OpenCV, Android Studio, Unity, SolidWorks, Django, React
Miscellaneous:	Linux, long-distance running, drawing, piano, clarinet

Other Projects

- Moments: Android app to revisit happy moments (honorable mention at 2015 Greylock Hackfest)
- Scavengr: Android App for going on and creating scavenger hunts (Feb 2015 - May 2015)
- BattleJeweled: multiplayer, customizable make-3 cross-platform game app (Jan 2015)